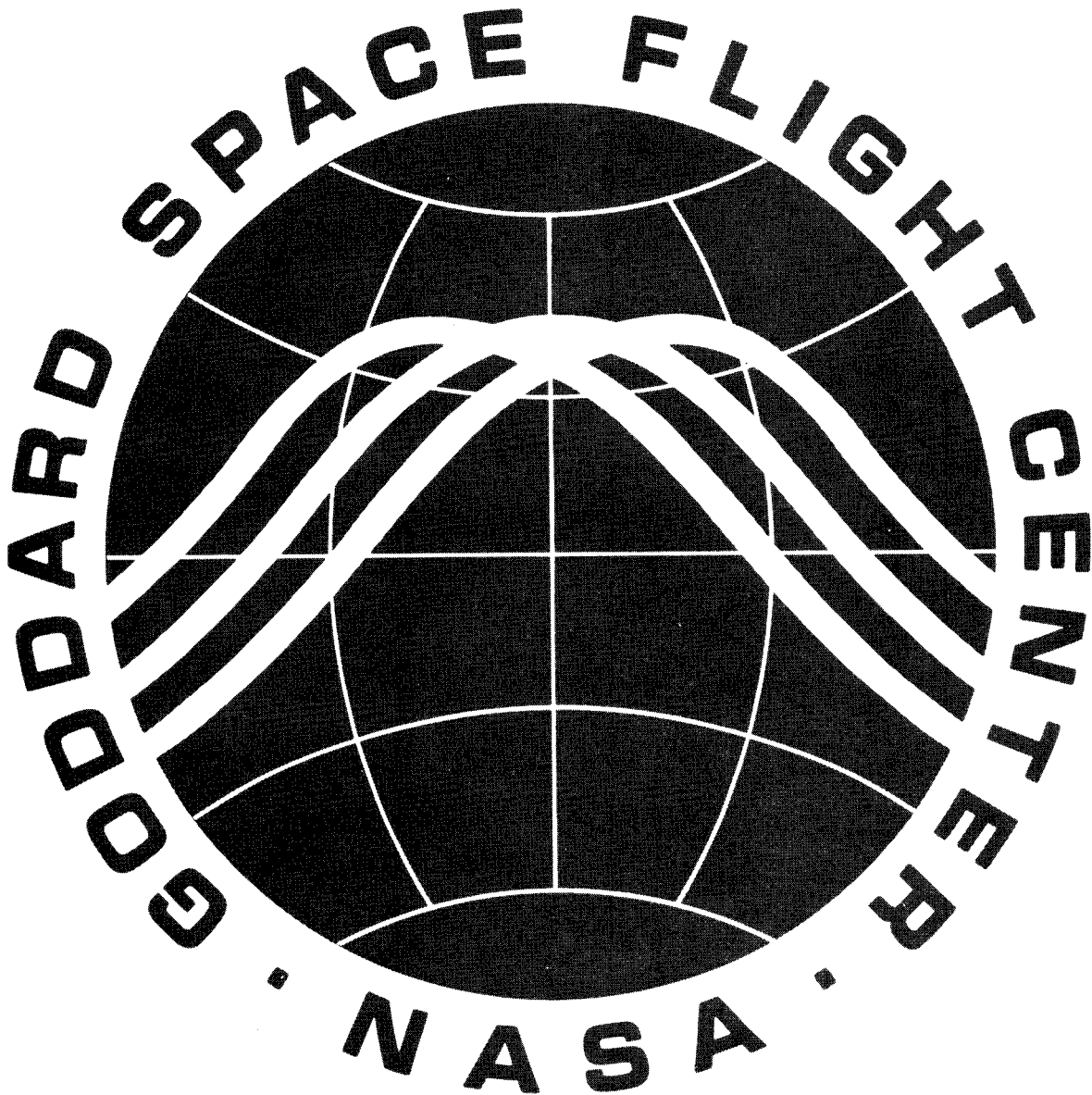


March 15, 1971

Vol. 18, No. 12

GODDARD NEWS

The Second Decade



Special Anniversary Issue

Goddard Space Flight Center

March 16, 1961—March 16, 1971

Highlights

---1957---

October 4: Launch of Russia's Sputnik, first man-made earth satellite.

During October: The Vanguard Minitrack network became operational.

---1958---

January 31: Launch of Explorer 1, first U.S. satellite.

March 17: Launch of Vanguard 1, second U.S.-IGY satellite. Proved the earth to be slightly pear shaped.

August 1: U.S. Senator J. Glenn Beall of Maryland announced that the new "outer space agency" would establish its laboratory and plant in Greenbelt, Maryland.

October 1: First official day of NASA.

---1959---

May 1: The "Beltsville Space Center" was renamed the "Goddard Space Flight Center."

August 7: Launch of Explorer 6, first Goddard-managed satellite.

---1960---

April 1: Launch of Tiros 1, a weather satellite that took pictures of the earth's cloud cover.

August 12: Launch of Echo 1, first passive communications satellite. This first successful launch by Goddard's Delta booster began a winning record that now stands at 76 successful orbits out of 82 launch attempts.

---1961---

February 15: James E. Webb becomes NASA Administrator.

March 16: Dedication of the Goddard Space Flight Center.

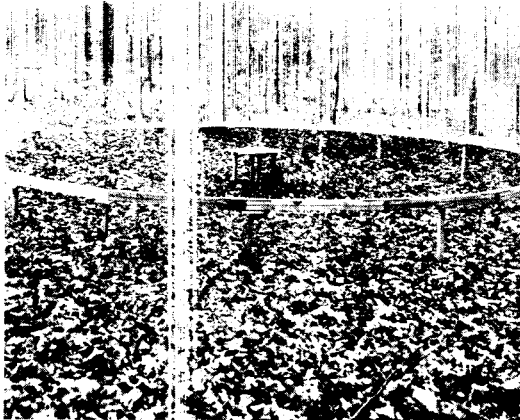
March 31: All stations in Goddard's Mercury tracking network become operational.

May 5: First manned Mercury mission, the sub-orbital flight of Alan B. Shepard, Jr., in "Freedom 7."

Space Quotes

President John F. Kennedy, May 25, 1961--"I believe that this Nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth."

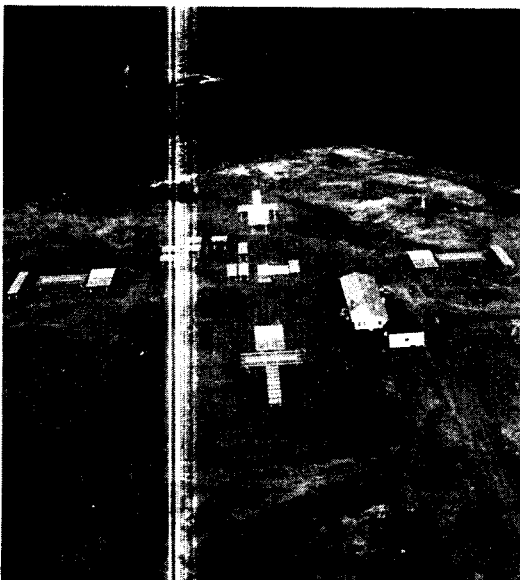
President Richard M. Nixon--"In the year 2000 we on this earth will have visited new worlds where there will be a form of life."



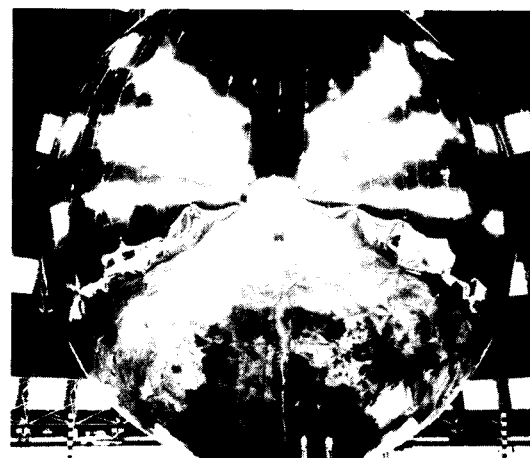
Marker for a new building at Goddard.



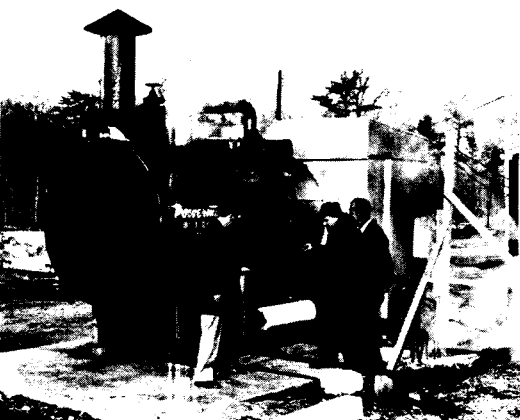
A new sign for a new Space Center.



Minitrack station



Echo 1



Goddard's early steam plant.



Mrs. Robert H. Goddard unveils a bust of her husband at the dedication of the Goddard Space Flight Center on March 16, 1961.

First three buildings at Goddard.

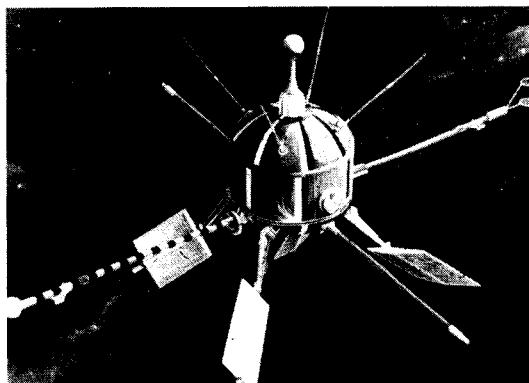




Fabrication's old shop area in Building 4.



OSO 1



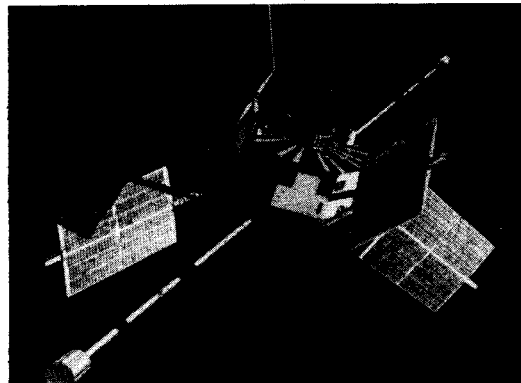
Ariel 1



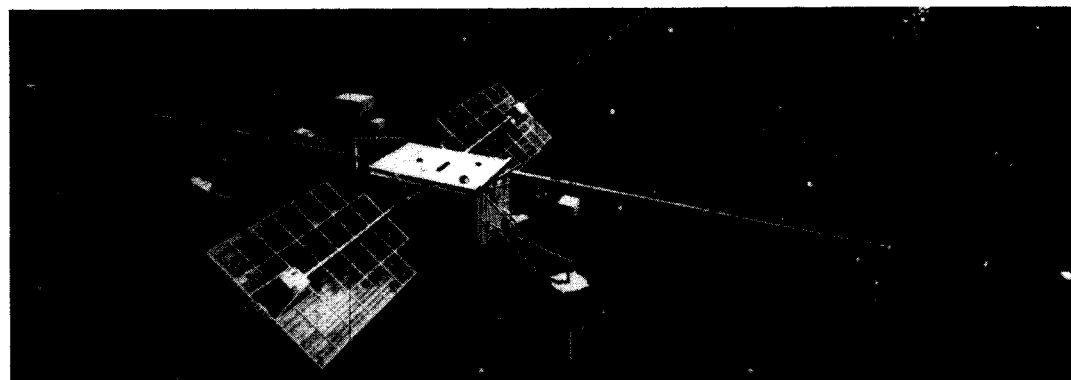
Japan received the first live TV transmission across the Pacific via Relay 1.



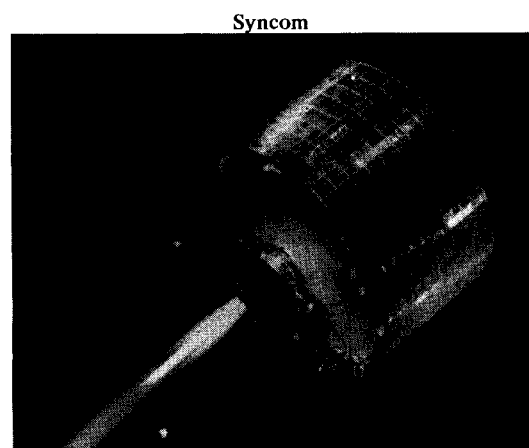
Early NASCOM teletype terminals.



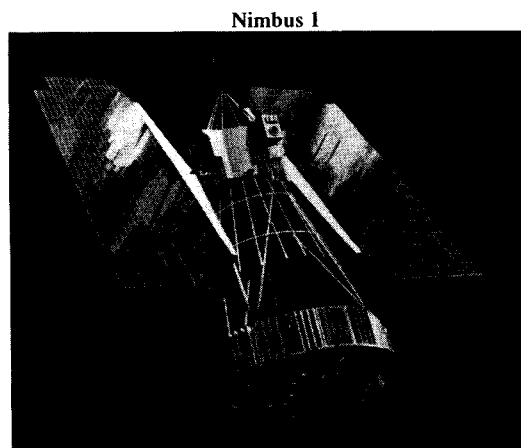
IMP



OGO



Syncom



Nimbus 1

Highlights

--- 1962 ---

February 20: First manned orbital space flight. Mercury astronaut John Glenn, Jr., completed three orbits aboard "Friendship 7."

March 7: Launch of OSO 1, first Orbiting Solar Observatory.

April 26: Launch of Britain's Ariel 1, Goddard's first international satellite.

July 10: Launch of Telstar 1, first privately financed active communications satellite.

September 29: Launch of Canada's Alouette 1, the Swept Frequency Topped Sounder.

December 13: Launch of Relay 1, NASA's first active communications satellite, to investigate wide-band communications between ground stations and a low altitude satellite.

--- 1963 ---

March 19: First known transmission of color television via Relay 1.

July 26: Launch of Syncom 2, first satellite in a near synchronous orbit.

November 22: First live American television transmission across the Pacific sent via Relay 1 from the Mojave ground station to Tokyo.

November 27: Launch of Explorer 18, first of the highly successful Interplanetary Monitoring Platforms (IMP), designed to map magnetic fields of space and the effects of solar winds and cosmic rays on the earth's atmosphere.

December 21: Launch of Tiros 8. First transmission of "live" weather photo using APT system.

--- 1964 ---

August 19: Launch of Syncom 3, first truly synchronous orbiting satellite.

August 28: Launch of Nimbus 1: first 3 axis stabilized weather satellite; first global coverage by a weather satellite and first infrared weather photos.

September 5: Launch of OGO 1, first Orbiting Geophysical Observatory.

December 15: Launch of Italy's San Marco 1, first satellite built in Western Europe and launched in the U.S. by a foreign crew.

Space Quote

Earl Hubbard, American philosopher--
"Earth-bound history has ended. Universal history has begun. The United States is now building the first public stairway to the stars. It is this Nation's destiny to help find many worlds for man and so bring to all men on earth a new hope—a new future in a universe of infinite diversity and opportunity."

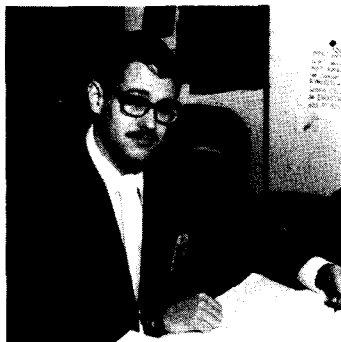
(See Page 8)

Where Were You in March of 1961?



Catherine O. Broderick, Administrative Officer for the Computation Division:

"When it was first in the wind that Goddard was to locate its facility on these grounds, I was very much chagrined. Being anti-progress at the time (at least on my home grounds) I had hopes that the Glenn Dale-Greenbelt area would retain its pastoral environment indefinitely—a typical small town attitude. I had also nourished a secret desire at the time of purchasing back my grandfather's old farm that was located where the test and training facility is now situated. He lived there from 1908 until he was forced out in the Forties when the Dept. of Agriculture increased their holdings. I had very fond memories of the many summers I had spent there and it meant much to me to live there once again. With the advent of Goddard on the scene, this dream was shattered. I soon became attuned to the times though, and decided if you can't lick them, join them. So, in the Spring of '62 I joined the "on-boards" here and have since remained."



Glenn "Ed" Pearson, CSI Data Analyst:

"What was I doing March 16, 1961? That day I probably started out carrying ten or eleven odd books the half-block to my junior high-school. At that time I was in eighth grade, bemoaning my English lessons and feeling gyped that 7th and 9th graders got to take 'Science' whereas 8th graders had the option of 'Art' or 'Music Appreciation.' As it turned out I missed 'Science' again in the ninth grade and later went on to gain a degree in Sociology instead of E.E. or Physics. My impression as a youngster of the space age was that U.S. was firmly entrenched behind Russia in space exploration—viewed in terms of the heaven hardware Russia was able to loft into space. After school I probably went home to the enjoyment of building and launching my own small model rockets; a hobby picked up in 1958 and one which I still pursue. At that time I never imagined that the U.S. would beat Russia to the moon (that was a 1975 project at least!) or that in four short years I would start summer work at Goddard as an analogue tape evaluator . . . and the beginnings of a career."



Maceo Leatherwood, Visual Information Specialist in the Presentation Section:

"I was working as an illustrator for the U.S. Navy Department, but I was looking forward to participating in the Space Program. I came to Goddard in June of 1961."



Dr. Leslie H. Meredith, Deputy Director for Space and Earth Sciences:

"In March of 1961 I had the pleasure of leading the Space Sciences Division whose members had in their short history already launched over forty sounding rockets, managed four successful spacecraft launches, flown ten spacecraft experiments, initiated a number of new projects, and were well on the way to building the world's premier space sciences group. Our many GSFC colleagues who made it all possible are appreciatively invited to a special symposium on March 31 at which time the group's scientific accomplishments in the following decade will be reviewed."



Leon Woodard, Aerospace Technologist, Network Support Branch:

"In March of 1961, I worked for the Martin Marietta Corporation, in Baltimore, Maryland, as a Maintainability Engineer on the Titan/Gemini launch vehicle. This work included maintainability analysis, monitoring of engineering design, determination of remove-replace time for each module and the total down time for each maintenance item."



J. Frederick Taub, Head, Aerospace Experimental Machining Branch:

"I was at Goddard. The following month, after commuting from the Langley Research Center since November 1969, I moved my family to Maryland. In March 1961, the Fabrication Division had just become operational in Building 4 along with John New's Test & Evaluation Division, Milton Schack's Thermal Systems Branch and Phil Miller's Facilities Engineering Division."



Mary Collard, Security Branch:

"Ten years ago in March I had been with Goddard for almost a year. There were not as many people as there are now, so you knew most of the employees."

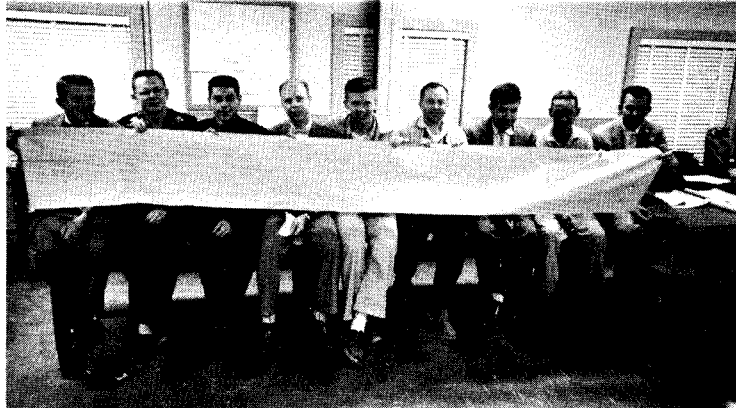


John Morton, Head of the Network Computation Section:

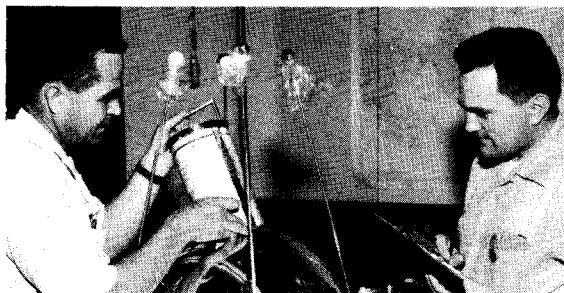
"I had been here since August of 1960 doing basically the same thing I am doing now. At that time we were in the middle of one of the suborbital tests of the Mercury Redstone launch vehicle. My group in the old Data Operations Branch had responsibility for systems testing and systems reliability work. We recommended to our Branch Chief Jim Donegan and to Cal Packard what systems should be used in support of a particular space flight. If I remember correctly, there was only one complete building at Goddard at this time. Our computer equipment had just recently been moved from Building 1 to the basement of Building 3."



VANGUARD STAFF MEMBERS AT NRL. From left are Dr. Joseph W. Siry, Head of the Theory and Analysis Staff; Daniel G. Mazur, Manager of the Vanguard Operations Group; J. M. Bridger, Head of the Vehicle Branch; Cdr. W. E. Berg, Navy Program Office; Dr. John P. Hagen, Project Vanguard Director; Dr. J. P. Walsh, Deputy Project Director; M. W. Rosen, Technical Director, John T. Mengel, Head of the Tracking and Guidance Branch; and Dr. Homer E. Newell, Science Program Coordinator. L. Winkler, Engineering consultant, was not present.



HOLDING SPUTNIK DATA at the Blossom Point, Maryland, Minitrack station are (from left) Curtis Stout, Chesley Looney, Jerry Taub, Vic Simas, Al Bartholomew, Ed Scobey, Roger Easton, Bill Mitchell and Marty Votaw.



FROM LEFT are Graham Moore and Frank Martin.



JOHN SHEA (left) Joe Schwartz and Graham Moore (right).



Old Vanguard Team:

First at Goddard

St. Patrick's Day, 1958, is a very special date for many people here at Goddard. On that day, Vanguard I was successfully launched from Cape Canaveral (now Cape Kennedy) by a team from the Naval Research Laboratory (NRL) that would later transfer to Goddard.

The small, "grapefruit-sized" satellite they designed was the first to use solar cells for power, and it continued to transmit signals for over six years. Its data demonstrated the pear shape of the earth.

In November, 1958, about 150 members of the NRL team became the Vanguard Division of the newly formed National Aeronautics and Space Administration. Two months later, they became the early Goddard staff. About 80 are still at the Center.

The following are pictures taken during the Vanguard days of 1957-1959. How many people do you know?



WITH VANGUARD 1 are (from left) George MacVeigh, Roger Easton, an unidentified man from NRL, Bob Baumann, and Joe Schwartz.



WITH A LATER VANGUARD are (from left standing) Bob Baumann, Dave Corbin, Bob Peterson and Bob Stroup. Francis LeDoux is kneeling.

YOU MAY KNOW THEM NOW, CAN YOU FIND THEM THEN? Many members of the NRL Vanguard Operations Group later came to Goddard or the Kennedy Space Center. Goddard men who are still here are Richard Batchelder, Francis Downey, George MacVeigh, Daniel G. Mazur, Ron Muller, Joe Purcell, Robert Pickard, Roger Ratliff, Bill Schindler, and David Suddeth. Also, Leo Malone, deceased.

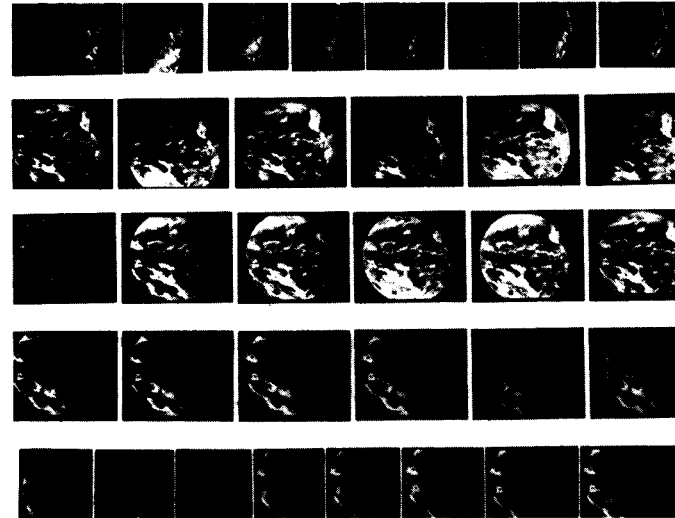


Changing I The Earth ...A



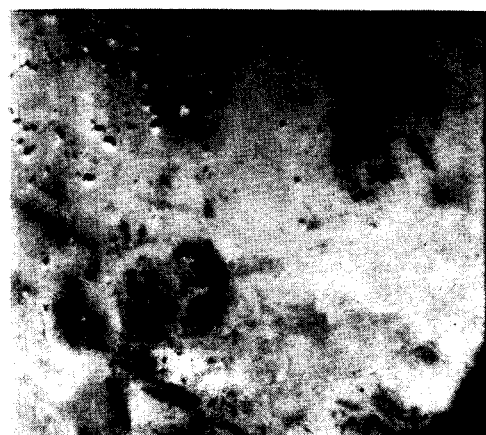
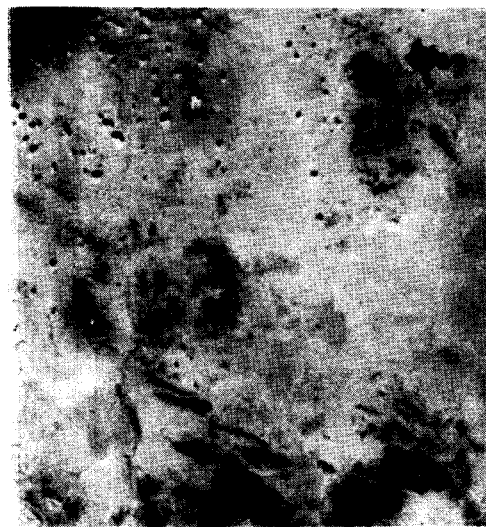
THIS FIRST USEABLE WEATHER PHOTO from a satellite (left) was sent to elated scientists from TIROS-1 during the satellite's second orbit on April 1, 1960. The photo, taken from an altitude of 465 statute miles with a wide-angle one-half-inch vidicon camera, shows the St. Lawrence River (dark, upper right) with most of the Eastern Seaboard under cloud cover. In the photo at right, taken a decade later, the weatherman cooperated better so Nimbus 3 could take a panoramic view of approximately the same area with an infrared radiometer from an altitude of about 700 miles.

THE FIRST MULTISPECTRAL ORBITAL PHOTOGRAPHY for scientific purposes was taken on the Apollo 9 flight in 1969 as part of the SO65 experiment, for which Paul Lowman of the GSFC Planetology Branch was principal investigator. This typical array shows volcanic fields (center and upper right) and folded mountains in northern Mexico as seen in four different wavelength regions. The SO65 experiment served as a preliminary feasibility test for Goddard's ERTS-A satellite to be launched in 1972.



CHANGING PHASES OF THE EARTH. This series of photos was taken by the camera aboard the first Applications Technology Satellite (ATS 1) in December of 1966. First recorded by the ATS Ground Station in Rosman, N.C., the photos show the eastern Pacific Ocean and the North, Central and South American continents for an 18-hour period beginning about 6:30 p.m. EST. The sequence reads from right to left, beginning at the upper right.

THE EARTH AND MOON TOGETHER
Apollo 8 astronauts as they came
completing their last orbit on Christmas



Pictures of nd...The Moon



SCANDINAVIA as seen by the Nimbus 4 Image Dissector Camera System on April 13, 1970.

HER was the sight that greeted the
from behind the moon after com-
Eve 1968.



AN ASTRONAUT ON THE MOON, the American flag "flying" and footprints in the lunar dust became trademarks of the first manned lunar landing on July 20, 1969.

APOLLO 12 allowed astronauts to remove parts from an earlier moon lander—Surveyor 3, launched on April 19, 1967. Here one of the crewmen removes Surveyor's TV camera while the Apollo 12 lunar module can be seen on the horizon.



Highlights

---1965---

January 22: Launch of Tiros 9, first "cartwheel" configuration weather satellite.

March 23: First manned Gemini flight made by Virgil I. Grissom and John W. Young.

April 6: Launch of Early Bird, first of the Intelsat communications satellites launched by Goddard and financed by the COMSAT Corporation.

July 2: Launch of Tiros 10, first ESSA-funded Tiros weather satellite.

December 6: Launch of FR-1A, first French satellite.

December 15: Gemini 6, flown by Walter M. Schirra and Thomas P. Stafford, accomplished the first rendezvous in space by coming within six feet of Gemini 7 flown by Frank Borman and James Lovell, Jr.

---1966---

February 3: Launch of ESSA 1, first operational weather satellite.

December 7: Launch of ATS 1, first Applications Technology Satellite. First black-and-white weather photos from synchronous orbit.

---1967---

April 26: Launch of San Marco B, a Joint U.S./Italy project. First launch from a platform at sea.

July 19: Delta launch of Anchored IMP, inserted into lunar orbit on July 22.

November 5: Launch of ATS 3, Applications Technology Satellite. First color weather picture from synchronous orbit.

November 9: Apollo 4, first flight test of the Saturn V launch vehicle.

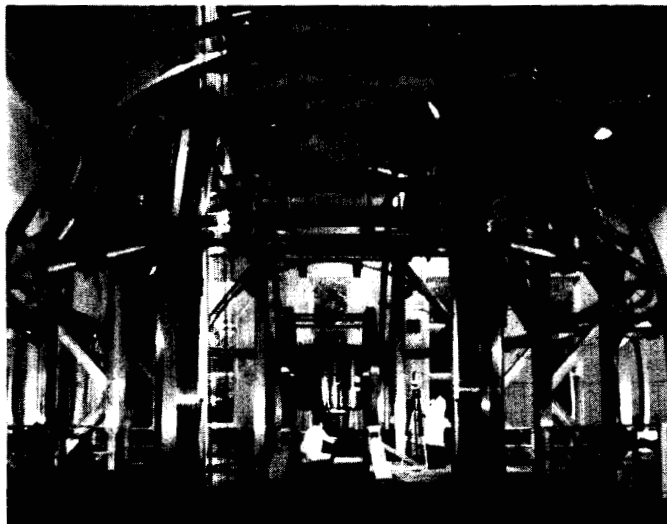
December 13: Dual Delta launch of Pioneer 8, NASA solar probe, and Goddard's TETR-1, Test and Training Satellite.



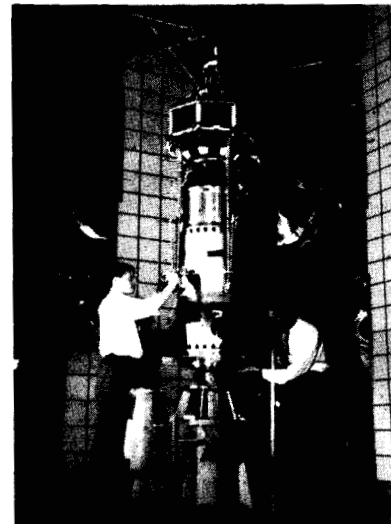
Goddard's Delta launch vehicle.



GSFC from the air in 1966.



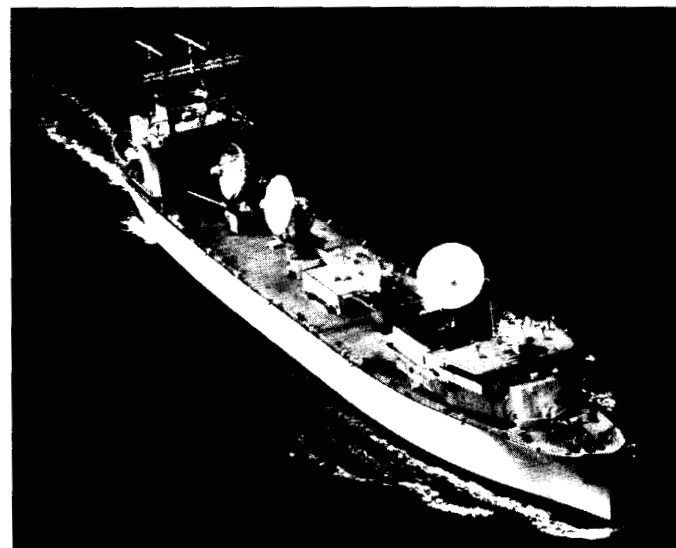
ATS-B is tested in T&E's Attitude Control Test Facility.



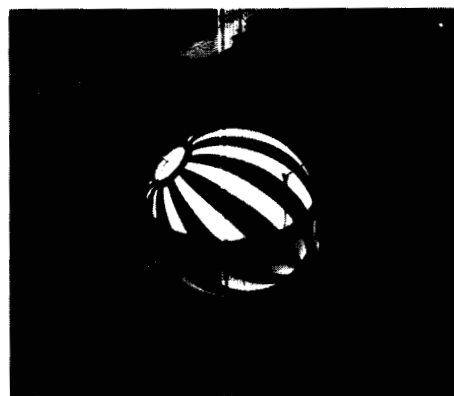
FR-1 in the Dynamic Test Chamber.



Gemini 7/6 rendezvous



Apollo tracking ship.



San Marco

Space Quote

Dr. George M. Low, Acting NASA Administrator--- "... For in order to survive in the changing environment on our planet earth, we must understand the processes that govern our universe. The world is changing, and we cannot stop that change. But perhaps, if we understand the change, we can channel it for the betterment of man . . ."

Highlights

---1968---

July 4: Launch of Explorer 38, first Radio Astronomy Explorer (RAE).

October 3: Launch of ESRO 1 for the European Space Research Organization.

October 11: Launch of Apollo 7, first manned Apollo mission. Crewmen: Walter M. Schirra, Donn F. Eisele, and Walter Cunningham.

December 5: Launch of HEOS 1, Highly Eccentric Orbit Satellite, for the European Space Research Organization.

December 7: Launch of OAO 2, first successful Orbiting Astronomical Observatory.

December 21: Launch of Apollo 8, first manned spacecraft to orbit the moon. Crewmen: Frank Borman, James A. Lovell and William A. Anders.

---1969---

January 30: Launch of Canada's ISIS 1.

April 14: Launch of Nimbus 3, first weather satellite to measure the vertical temperature of the earth's atmosphere.

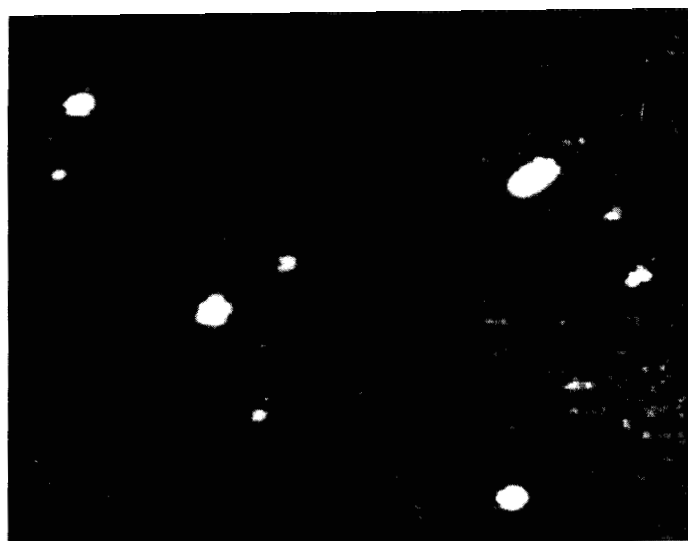
July 16: Launch of Apollo 11, first lunar landing mission. Crewmen: Neil A. Armstrong, Michael Collins and Edwin E. Aldrin.

November 8: Launch of GRS 1, first satellite of the Federal Republic of Germany.

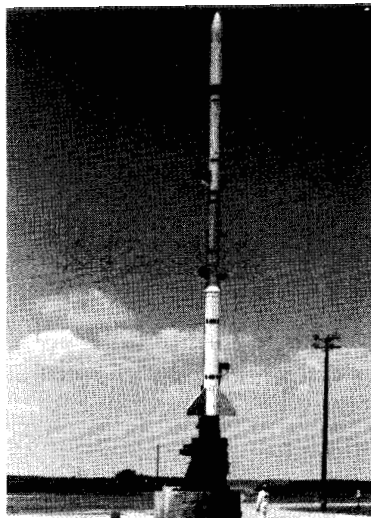
---1970---

January 23: Launch of TIROS-M, Improved TIROS Operational Satellite; first of the second generation operational weather satellites.

December 12: Launch of Uhuru 1, first of the Small Astronomy Satellites (SAS).



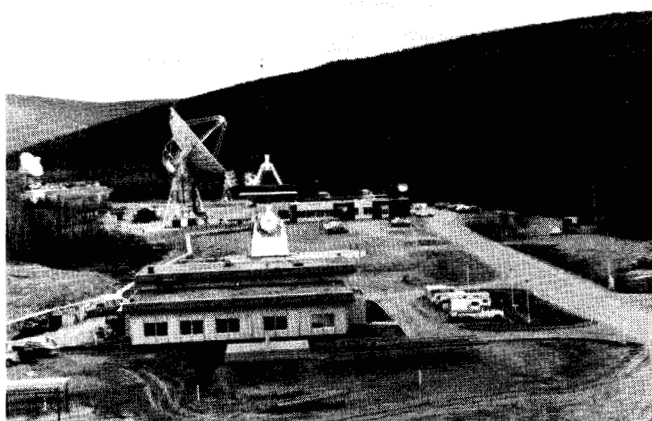
A first from OAO — stars in the Constellation Draco "photographed" in the ultraviolet.



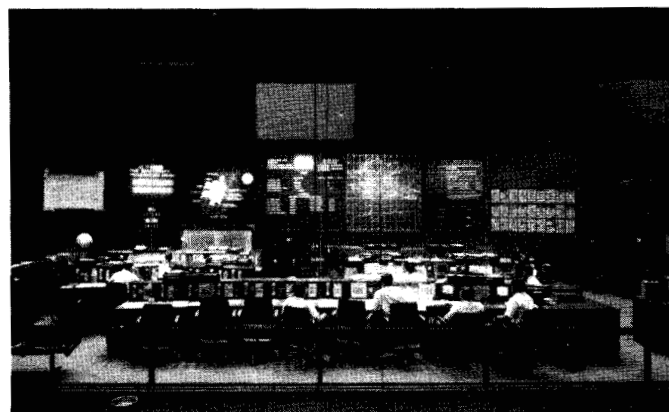
This sounding rocket is one of 1463 sent aloft by Goddard in over ten years.



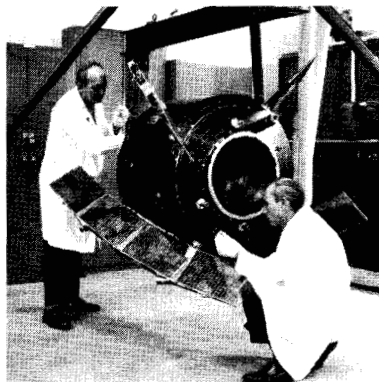
ITOS 1



Fairbanks, Alaska, one of 11 STADAN stations around the world.

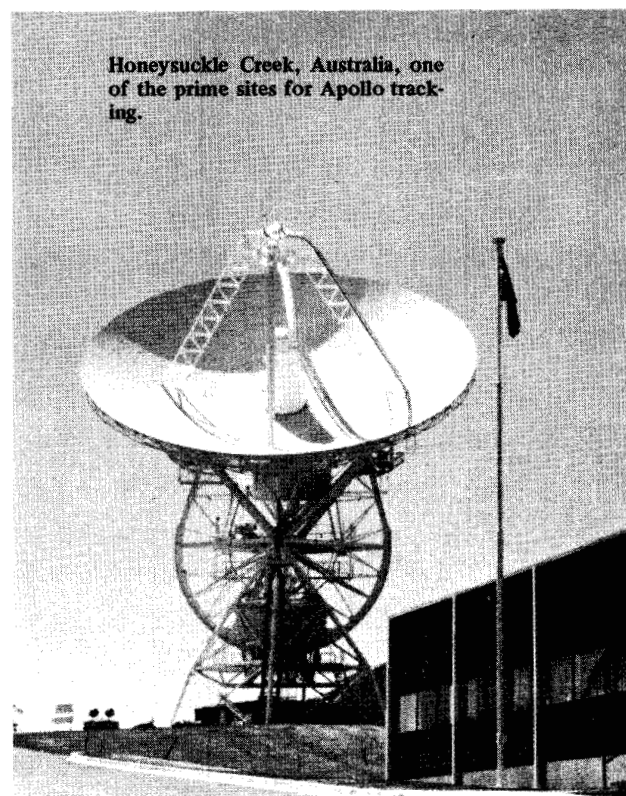
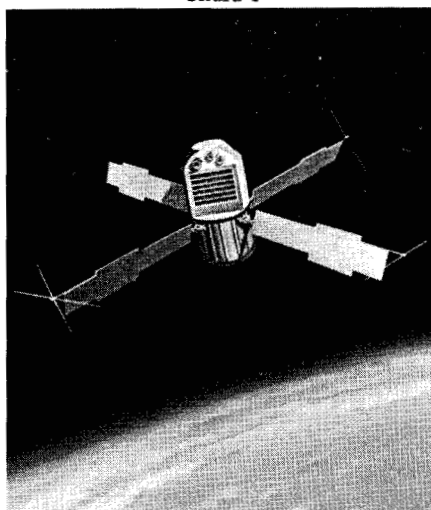


Control Center for the STADAN and MSFN.



Stability check for the first RAE.

Uhuru 1



Honeysuckle Creek, Australia, one of the prime sites for Apollo tracking.

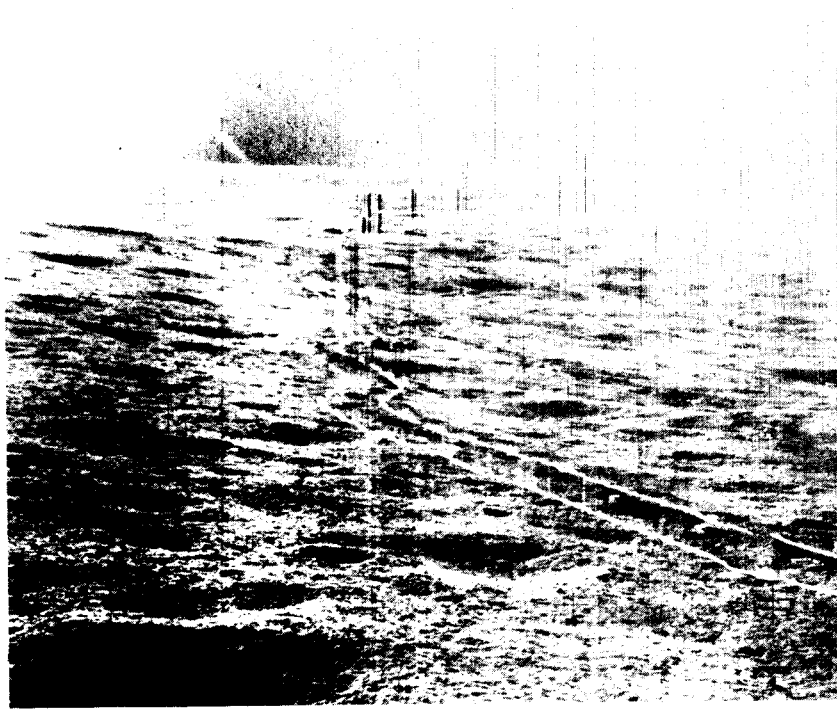
Space Quote

Congressman Olin E. Teague, of Texas---
 "Some people ask, 'Why should we spend this money to explore space when there is so much to be done here on earth?' Well, there was plenty to be done in Europe when Columbus left it. And there is still plenty to be done there. If Columbus had waited until Europe had no more internal problems, he would still be waiting, but the opening up of the new world did more to revive the European culture and economy than any internal actions could possibly have done."

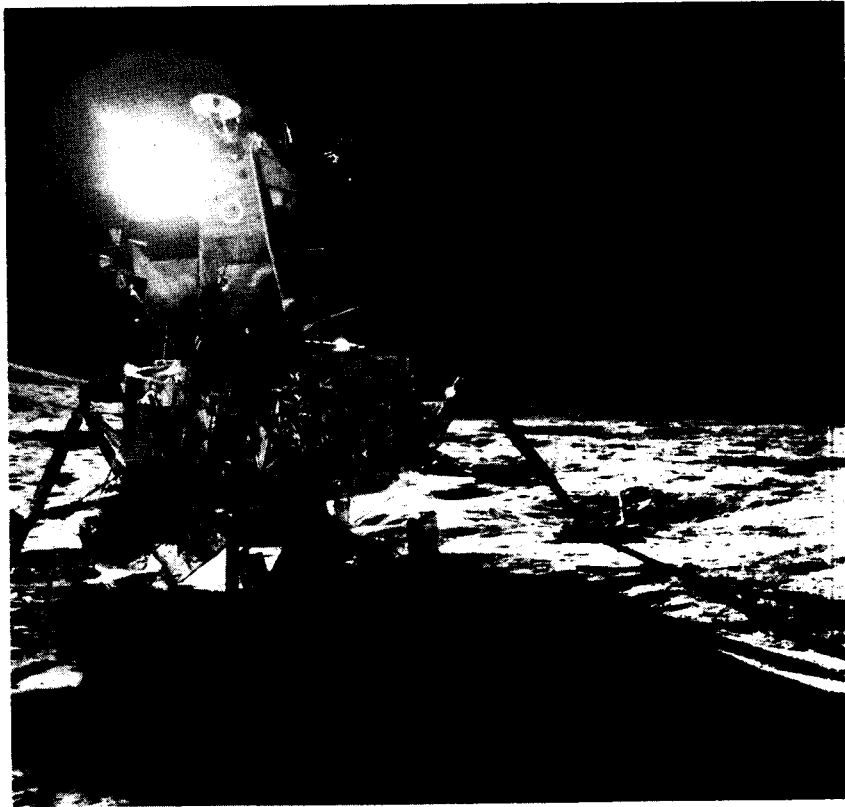
Apollo 14: Successful Mission Begins 1971

Launched on January 31, and completed with a spectacular splashdown in the Pacific on February 9, Apollo 14 scored the longest walk yet for men on the moon. Although astronauts Alan Shepard and Edgar Mitchell did not quite reach the rim of the Cone Crater as planned, they walked about one-and-a-half miles from the Lunar Module during their second EVA.

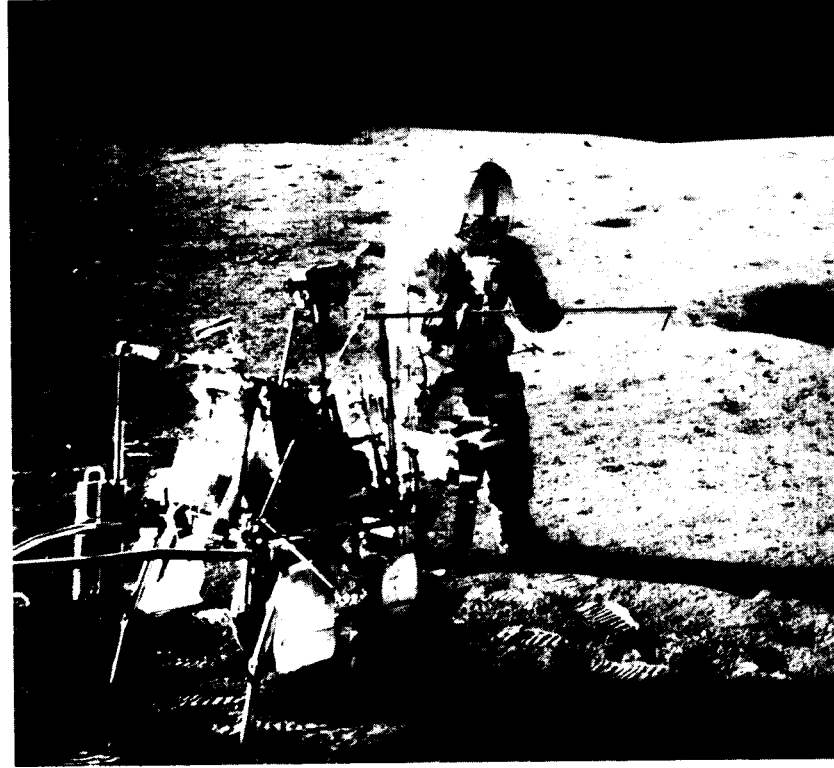
The following are some of the pictures they took of the Fra Mauro landing site. The pictures show a rough terrain where walking was difficult and men could easily lose their sense of direction on long treks.



TRACKS ON THE MOON. The trail left by the MET leads away from the Lunar Module during the Apollo 14 second EVA.



THE LUNAR MODULE Antares reflects the sun.



ALAN B. SHEPARD stands beside the Modularized Equipment Transporter (MET).

